

**REMARKS**

Claims 1, 5-7, 32-38 and 51-52 are pending; reconsideration is respectfully requested.

**Amendment of the Specification**

Application No. 10/726,744 was incorporated by reference into the present application. Applicants have inserted language into the specification of the present application, which language is taken virtually verbatim from the specification of Application No. 10/726,744 (p. 3-4 Summary and p. 8, lines 9-11). No new matter is added. (37 CFR § 1.57 and MPEP § 608.01(p) and § 2163.07(b)).

**Claim Rejections - 35 USC § 103**

*Claims 1, 5-7, 32-34, 51 and 52 are rejected under 35 USC § 103(a) as allegedly being unpatentable over Migowski (WO 89/07836) in view of Bass (US 6,207,887). Applicants traverse.*

Claim 1 as amended recites, in part, a method for providing power comprising: providing a thermoelectric generator wherein the thermoelectric generator comprises a plurality of thermocouples comprising p-type and n-type thin film semiconductor thermoelements formed on a single flexible substrate, the p-type or the n-type thermoelements having L/A ratios from about  $500 \text{ cm}^{-1}$  to about  $10,000 \text{ cm}^{-1}$ , and wherein a single p-type thermoelement is, or a plurality of p-type thermoelements in parallel with each other are, electrically connected in series with a single n-type thermoelement or with a plurality of n-type thermoelements in parallel with each other. (Support for the amendment is in the specification at, e.g., p. 4, lines 1-3 and 15-16.)

- A. Because certain of the elements of the recited process is not taught or suggested by the art of record, a *prima facie* case of obviousness is not present.

Migowski suggests an L/A ratio of  $15,000 \text{ cm}^{-1}$ . This L/A ratio is far outside the recited claim 1 range. The Bass reference clearly does not make up for this deficiency (nor does the Examiner assert such). Thus, no *prima facie* case of obviousness has been presented.

To support a *prima facie* case of obviousness all of the elements of the recited process must be taught or suggested. A January 2008 Board of Patent Appeals and Interferences decision entitled *In re Wada and Murphy* reversed a § 103 rejection because the Examiner did

not explain where or how cited art taught or suggested all of the features of a claimed invention. Of particular interest is the following BPAI articulation of applicable law:

When determining whether a claim is obvious, an examiner must make "a searching comparison of the claimed invention - including all its limitations - with the teaching of the prior art." *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995). Thus, "obviousness requires a suggestion of all limitations in a claim." *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003). Moreover, as the Supreme Court recently stated, "there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007).

Because none of the art of record, whether considered independently or in combination, teach or suggest the claimed method for providing power wherein the p-type or the n-type thermoelements have L/A ratios from about 500 cm<sup>-1</sup> to about 10,000 cm<sup>-1</sup>, a *prima facie* case of obviousness has not been presented.

- B. Because the L/A ratio is result effective, the lack of a teaching or suggestion in the prior art of the recited L/A ratio is not "excused" based on the allegation that the L/A ratio is a mere dimension limitation.

The Examiner, in essence, asserts that the fact that the prior art does not teach or suggest the recited L/A ratios is irrelevant because the criticality of the L/A ratio has not been shown with evidence. To support this basis of rejection the Examiner cites *Gardner v. Tec Systems, Inc.*, 725 F.2d 1388 (Fed. Cir. 1984). (Office action p. 8). However, there are two important differences between the *Gardner* case as compared to the present application and prior art.

First, in the *Gardner* case the prior art did not disclose dimensions at all - so it was unclear whether the dimensions were different or the same as the patented device. Here, the Migowski reference clearly discloses an L/A ratio far outside the range recited in the method claim.

Second, in *Gardner* there was no showing that the contested dimensions would change the performance of the device. In the current application, however, Applicants specification as discussed in Applicants September 2008 Amendment, indicate how the

L/A ratio is vital to the performance of the thermoelectric device/method. Specifically, as stated in the incorporated specification of Application No. 10/726,744, Applicants determined through testing that a key parameter affecting the power produced by the thermoelements is the length-to-area (L/A) ratio of the individual thermoelements. Applicants provide particular L/A ratios so to achieve desired power outputs at large enough voltages to be directly applicable to intended particular devices needing power, without having to provide voltage amplification. Put another way, the L/A ratios and dimensionalities taught by Applicants critically govern the difference between acceptable and non-acceptable output of a desired method/device.

- C. Because the prior art did not recognize that the L/A ratio is a result-effective variable, Applicants' determination of desirable ranges of the L/A ratio cannot be dismissed as obvious, routine experimentation. MPEP at § 2144.05 II B.

As stated above, the art of record does not teach or suggest the recited L/A ratios. Because the prior art did not recognize that the L/A ratio is a result-effective variable, it is improper for the Examiner to dismiss the recited limitation as being obvious as a mere optimization of dimensions based on routine experimentation. The law, as cited in MPEP § 2144.05 II B, has made it clear that to excuse such limitations as mere optimization of dimensions or ranges, the prior art must have recognized that the dimensions or ranges were result-effective variables. Put another way, recognition of the L/A ratio functionality is essential to a finding of obviousness of conducting experiments to determine such desirable ratios and to the resulting claimed processes reciting such. The prior art has not recognized such result-effective aspect of the L/A ratios so it cannot reasonably be held that the non-disclosure of the recited L/A ratio ranges in the prior art is irrelevant by asserting it was obvious experimentation for optimization. Such a conclusion would be both improper and incorrect.<sup>1</sup>

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<sup>1</sup> In addition, the Examiner's reliance on a finding of obviousness based on alleged routine experimentation and optimization of a dimension without inquiring as to whether such variable functionality was even recognized in the prior art, ignores the last sentence of § 103(a) – "Patentability shall not be negated by the manner in which the invention was made."

- D. Even if a *prima facie* case of obviousness were presented, the obviousness rejection is rebutted with a showing that the L/A ratio range is critical, producing unexpected results.

The L/A ratios are critical parameters of the devices utilized in the claimed methods, as is disclosed in the present application. The criticality of the L/A ratio was not known in the prior art but instead discovered by Applicants, whose testing produced unexpected superior results for the recited power producing method claims. Please see the § 1.132 Declaration of John DeSteele supporting this statement. Neither Migowski nor Bass, nor any other reference of record, whether considered independently or in combination, teach or suggest such L/A ratios or even recognize the importance of an L/A ratio. The showing of the unexpected results achieved through Applicants' discovery of the criticality of the L/A ratio rebuts any presented *prima facie* case of obviousness.

Claim 1: For the myriad of reasons set forth above, claim 1 is allowable over the art of record.

Dependent claims 5-7 and 32-34 are allowable for the reasons set forth above and for the reasons set forth in the prior filed Amendments – such arguments are not reiterated herein but continue to be asserted.

Claim 51: Claim 51 is allowable for the same reasons as set forth above in relation to claim 1 – such arguments are not reiterated herein but continue to be asserted.

Claim 52: Claim 52 is allowable for the reasons set forth in the prior filed amendments – such arguments are not reiterated herein but continue to be asserted.

*Claims 35-38 are rejected under 35 USC § 103(a) as allegedly being unpatentable over Migowski and Bass and further in view of Simeray (US 6,340,787). Applicants traverse.*

Claims 35-39 are allowable for the reasons set forth above in relation to claim 1 as Simeray does not make up for the deficiencies of Migowski or Bass. Furthermore, based on the previously presented arguments that the prior art is improperly combined, that Migowski teaches away from even considering art from a three-dimensional device (see p. 1, second paragraph), and that the proposed combination ignores the synergistic effect of the claimed method step

elements, claims 35-39 are allowable over the art of record. The arguments to such effect as set forth in the prior filed amendments are not reiterated herein but continue to be asserted. .

Claims 35-39: For the myriad of reasons set forth above, claim 35-39 are allowable over the art of record.


***Request for Interview***

If any issues remain, the Examiner is hereby requested to please contact the undersigned attorney to arrange a telephonic interview. It is believed that a brief discussion of the merits of the present application may expedite prosecution.

Respectfully submitted,

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